

IN THE CLAIMS

1-28 (canceled)

29 (new) A mixture comprising:

A) at least one electrically conductive or semiconducting element or compound selected from the group consisting of a), b), or c), wherein

a) is at least one electrically conductive or semiconducting hard particle having a particle size distribution with a d_{80} passage value of $\leq 6 \mu\text{m}$, measured with a Mastersizer of type S from Malvern instruments,

where, however, not only electrically conductive or semiconducting substances or any mixtures of these based only on particles of aluminum, iron phosphide or metallic zinc or any mixtures of these and optionally on up to 5 wt.% of graphite or molybdenum sulfide or any mixtures of these; wherein

b) is at least one electrically conductive or semiconducting polymeric compounds or any mixtures of these or derivatives thereof; and wherein

c) is at least one electrically conductive or semiconducting amine- or ammonium-containing compound which are only present with at least one of a) or b);

whereby the mixture is free from carbon black; and

B) at least one binder, optionally including a reactive diluent; and

(C) at least one crosslinking agent or a photoinitiator, whereby the content of said binder or crosslinking agent is in the range from 16 to 42% by weight, and

D) optionally at least one component chosen from d), f) or g), wherein

d) is at least one post-crosslinking compound,

f) is at least one corrosion protection pigment based on a silicate, whereby the corrosion protection pigments have an average particle size d_{50} in the range from 0.01 to 5 micron; and
g) at least one of corrosion inhibitor which are not present in particle form; and optionally
E) at least one of organic solvent or water;
wherein the total weight of component A) is from 0.5 to 70 wt.% based on the total weight of the mixture, and wherein component a) is present in an amount of the total weight of the mixture 0 to 60 w.%.

30. (new) A mixture according to claim 29, wherein said post-crosslinking compound d) is selected from the group consisting of isocyanate, blocked isocyanate, isocyanurate and a melamine resin.

31. (new) A mixture according to claim 29, wherein the sum of the weight contents of the water-insoluble or sparingly water-soluble pigmentation a) relative to the sum of the total pigmentation $\Sigma(a + f)$ is 30 to 99 wt.%.

32. (new) A mixture according to claim 29, wherein a mixture of all electrically conductive or semiconducting particles a) has an average particle size d_{50} in the range from 0.1 to 4.5 microns.

33. (new) A mixture according to claim 29, wherein said average particle size d_{50} ranges from 0.2 to 3.5 microns.

34. (new) A mixture according to claim 29, wherein on addition to the mixture, the mixture of all the types of very soft or soft particles which are capable of sliding has a particle size passage value d_{80} in the range from 1 to 25 μm .

35. (new) A mixture according to claim 29, wherein in addition to the mixture, the mixture of all the types of very soft or soft particles which are capable of sliding has an average particle size d_{50} in the range from 0.1 to 20 μm .

36. (new) A mixture according to claim 29, wherein on addition to the mixture, the metallic particles, including alloy particles, have a particle size passage value d_{80} in the range from 0.05 to 6 μm .

37. (new) A mixture according to claim 29, wherein on addition to the mixture, the metallic particles, including alloy particles, have an average particle size d_{50} in the range from 0.01 to 10 μm .

38. (new) A mixture according to claim 29, wherein on addition to the mixture, the corrosion protection particles f) have an average particle size d_{50} in the range from 0.01 to 5 μm .

39. (new) A mixture according to claim 29, wherein on addition to the mixture, the corrosion protection particles f) have the particle size passage value d_{80} in the range from 0.03 to 6 μm .

40. (new) A mixture according to claim 29, wherein the electrically conductive or/and semiconducting hard particles a) comprise substances based on compounds or mixture of compounds with or of spinels, or substances based on borides, carbides, oxides, phosphates, phosphides, silicates, silicides or particles having an electrically conductive coating or a mixture thereof or a compound thereof.

41. (new) A mixture according to claim 29, wherein at least 10 wt.% of the electrically conductive or semiconducting hard particles a) are oxides or phosphides substantially comprising at least one of aluminum, iron, cobalt, copper, manganese, molybdenum, nickel, niobium, tantalum, titanium, vanadium, tungsten, zinc or tin.

42. (new) A mixture according to claim 29, wherein the very soft or soft particles which are capable of sliding contain at least one of graphite, a sulfide, a selenide, a telluride, an antimony-containing sulfide, a tin-containing sulfide, a molybdenum-containing sulfide or a tungsten-containing sulfide.

43. (new) A mixture according to claim 29, wherein compound b) is at least one of polyaniline, polypyrrole, polythiophenene or a mixture thereof.

44. (new) A mixture according to claim 29, containing at least one electrically conductive or/and semiconducting compound c), that is a tertiary amine, an ammonium compound or derivative thereof.

45. (new) A mixture according to claim 29, comprising not more than 1.5 wt.% of wax or of substances having wax-like properties.

46. (new) A process for producing a mixture according to claim 29 comprising applying the mixture to a substrate, optionally drying or at least partly crosslinking the mixture as a result of which a coating of which the average layer thickness in the dry state is not more than 6 µm, measured in the dry state microscopically on a ground cross-section, is produced on the substrate.

47. (new) The process of claim 46, wherein the substrate is precoated.

48. (new) A process according to claim 46, wherein the very soft or soft particles which are capable of sliding, are not ground or are ground with only a low intensity before addition to the mixture or in the mixture or in a portion of the mixture.

49. (new) A process according to claim 46, wherein the electrically conductive or/and semiconducting hard particles a) are ground by themselves.

50. (new) A process according to claim 46, wherein the coating is produced with a mixture in which the mixture of all the types of particles a) has a particle passage value d_{80} which is no greater than the layer thickness of the dry coating produced therewith.

51. (new) A process according to claim 46, wherein on grinding of the electrically conductive or/and semiconducting hard particles a), the over-sized particles are predominantly comminuted, so that a narrower particle size distribution arises.

52. (new) A process according to claim 46, wherein the particle size passage value d_{99} of the electrically conductive or semiconducting hard particles a) is not substantially greater than, no greater than or only slightly less than the average thickness of the coating.

53. (new) A process according to claim 46, wherein the applied mixture is dried, stoved, irradiated with free radicals or heated in order to form a thoroughly crosslinked, corrosion-resistant, viscoelastic coating.

54. (new) A process according to claim 46, wherein the resultant coating has a thickness of less than 10 μm .

55. (new) A process according to claim 46, wherein the mixture is free or substantially free from organic lubricants.

56. (new) A process according to claim 46, wherein the substrate comprises at least one metal or metal alloy.

57. (new) A process according to claim 46, wherein the mixture according to the invention is applied directly to a pretreatment coating or said substrate.

58. (new) The product prepared by the process of claim 46.

59. (new) A metal substrate coated with product of claim 58.

60. (new) A process according to claim 46, wherein said mixture is free from at least one of PTFE, silicone, inorganic acids, silicone oil, organic acids, heavy metals, arsenic, lead, cadmium, chromium, cobalt, copper or nickel.

61. A process according to claim 46, wherein said substrate comprises at least one of aluminum, iron, magnesium or steel.

62. (new) The mixture of claim 40, further comprising metal particles or metal alloy particles.

63. (new) The mixture of claim 62, wherein said metal particles or metal alloy particles comprise at least one of aluminum, iron, cobalt, copper, molybdenum, nickel, niobium, silver, tantalum, titanium, vanadium, tungsten, zing or tin.